

## WHAT IS CLAIMED IS:

1. A method of making a helmet that is custom-fitted to a wearer's head comprising positioning a shape-forming means over said wearer's head, and hardening said shape-forming means to provide a hardened headform that substantially conforms to the shape of said wearer's head.
2. A method according to claim 1, further comprising using said hardened headform to mold, or to prepare a mold for, an impact energy absorbing liner for said helmet, said energy absorbing liner thereby having an inner surface substantially conforming to the shape of said wearer's head.
3. A method according to claim 2, said impact energy absorbing liner comprising viscoelastic flexible foam.
4. A method according to claim 2, said impact energy absorbing liner comprising expanded polystyrene.
5. A method according to claim 2, said impact energy absorbing liner comprising expanded polypropylene.
6. A method according to claim 1, further comprising the steps of:
  - casting a hardened fixture within a cavity defined by said headform, said hardened fixture substantially conforming to the shape of said wearer's head, and
  - using said hardened fixture to mold an impact energy absorbing liner for said helmet, said energy absorbing liner thereby having an inner surface substantially conforming to the shape of said wearer's head.
7. A method according to claim 6, said impact energy absorbing liner comprising viscoelastic flexible foam.
8. A method according to claim 6, said impact energy absorbing liner comprising expanded polystyrene.
9. A method according to claim 1, further comprising providing a barrier over said wearer's head prior to positioning said shape-forming means thereover.
10. A method according to claim 1, further comprising positioning said hardened headform adjacent a mold cavity such that an exterior surface of said hardened headform and an interior surface of said mold cavity define a molding space therebetween.

11. A method according to claim 10, further comprising providing a foaming composition in said molding space, and curing said foaming composition to provide an energy absorbing foam liner for said helmet, said energy absorbing foam liner thereby having an inner surface substantially conforming to the shape of said wearer's head.

12. A method according to claim 11, said energy absorbing foam liner comprising viscoelastic flexible foam.

13. A method according to claim 11, said energy absorbing foam liner comprising expanded polystyrene.

14. A method according to claim 6, further comprising positioning said hardened fixture adjacent a mold cavity such that an exterior surface of said hardened fixture and an interior surface of said mold cavity define a molding space therebetween.

15. A method according to claim 14, further comprising providing a foaming composition in said molding space, and curing said foaming composition to provide an energy absorbing foam liner for said helmet, said energy absorbing foam liner having an inner surface substantially conforming to the shape of said wearer's head.

16. A method according to claim 11, said foaming composition comprising isocyanate and at least one polyol.

17. A method according to claim 15, said foaming composition comprising isocyanate and at least one polyol.

18. A method according to claim 1, further comprising providing a hood having a hood thickness over said wearer's head prior to positioning said shape-forming means thereover, said hood thickness defining a clearance to accommodate a foam spacer for air circulation which is to be provided in said helmet between an energy absorbing liner molded using said headform and said wearer's head.

19. A method according to claim 1, said shape-forming means being a heat-softenable plastic sheet that is heated and positioned over said wearer's head in a softened state, and is maintained in place over said wearer's head until said heat-softened plastic sheet hardens to yield said hardened headform substantially conforming to the shape of said wearer's head.

20. A method according to claim 19, said heat-softened plastic sheet being provided in the form of a crude flower having at least 3 elements.

21. A method according to claim 20, at least one of said elements having a laterally extending tab, the laterally extending tab being pressed against an adjacent one of said elements of the plastic sheet to aid in defining the shape thereof to conform to the wearer's head.

22. A method according to claim 1, said shape-forming means being a stretchable beanie cap that is coated or impregnated with a curable polymeric material, and is positioned and maintained snugly over said wearer's head until the curable polymeric material cures to yield said hardened headform substantially conforming to the shape of said wearer's head.

23. A method according to claim 22, said curable polymeric material being in the form of a curable liquid resin.

24. A method according to claim 22, said curable polymeric material being water curable.

25. A method according to claim 22, said beanie cap being a knitted polyester fabric that is impregnated with a water curable polyurethane resin.

26. A method according to claim 1, said shape-forming means being at least one strip of curable tape that is wrapped about said wearer's head to provide a headwrap made from said curable tape that substantially conforms to the shape of said wearer's head, said headwrap being cured to yield said hardened headform substantially conforming to the shape of said wearer's head.

27. A method according to claim 26, said shape-forming means being a plurality of strips of said curable tape.

28. A method according to claim 26, said curable tape being made from a textile material that has been coated or impregnated with a curable polymeric material.

29. A method according to claim 26, said curable tape being made from a curable polymeric material.

30. A method according to claim 29, said curable tape being water curable.

31. A method according to claim 28, said curable polymeric material being water curable.

32. A method according to claim 26, said curable tape being made from a fiberglass fabric that has been coated or impregnated with a curable polymeric material.

33. A method according to claim 32, said curable polymeric material being water curable.

34. A method according to claim 6, said hardened fixture being made from Plaster of Paris.

35. A method according to claim 19, further comprising molding an impact energy absorbing liner using said hardened headform such that said energy absorbing liner has an inner surface substantially conforming to the shape of said wearer's head.

36. A method according to claim 22, further comprising molding an impact energy absorbing liner using said hardened headform such that said energy absorbing liner has an inner surface substantially conforming to the shape of said wearer's head.

37. A method according to claim 26, further comprising molding an impact energy absorbing liner using said hardened headform such that said energy absorbing liner has an inner surface substantially conforming to the shape of said wearer's head.

38. A method according to claim 19, further comprising the steps of:

- casting a hardened fixture within a cavity defined by said headform, said hardened fixture substantially conforming to the shape of said wearer's head, and
- using said hardened fixture to mold an impact energy absorbing liner for said helmet, said energy absorbing liner thereby having an inner surface substantially conforming to the shape of said wearer's head.

39. A method according to claim 22, further comprising the steps of:

- casting a hardened fixture within a cavity defined by said headform, said hardened fixture substantially conforming to the shape of said wearer's head, and
- using said hardened fixture to mold an impact energy absorbing liner for said helmet, said energy absorbing liner thereby having an inner surface substantially conforming to the shape of said wearer's head.

40. A method according to claim 26, further comprising the steps of:

- casting a hardened fixture within a cavity defined by said headform, said hardened fixture substantially conforming to the shape of said wearer's head, and
- using said hardened fixture to mold an impact energy absorbing liner for said helmet, said energy absorbing liner thereby having an inner surface substantially conforming to the shape of said wearer's head.

41. A method according to claim 1, said helmet being a motorcycle helmet.

42. A helmet that is custom fitted to a particular wearer's head, the helmet comprising an impact energy absorbing liner, said energy absorbing liner being custom made such that it has an inner surface substantially conforming to the shape of said wearer's head.

43. A helmet according to claim 42, said energy absorbing liner being a one-piece liner.

44. A helmet according to claim 43, said one-piece liner being substantially uniformly and continuously fitted with said wearer's head along said inner surface thereof when said wearer is wearing said helmet.

45. A helmet according to claim 42, said impact energy absorbing liner being made as one piece.

46. A helmet according to claim 42, said energy absorbing liner comprising viscoelastic flexible foam.

47. A helmet according to claim 42, said energy absorbing liner comprising semi-rigid viscoelastic flexible foam.

48. A helmet according to claim 42, said energy absorbing liner comprising expanded polystyrene.

49. A helmet according to claim 42, said energy absorbing liner comprising expanded polypropylene.

50. A helmet according to claim 47, said foam exhibiting substantially 100% crush recovery following an impact.

51. A helmet according to claim 47, said foam being effective to attenuate the force of impact resulting from an impact velocity anywhere in the range of 2-7 m/sec, and to dissipate a substantial portion of said impact force away from a localized region of impact.

52. A helmet according to claim 9, said barrier being effective to cover the wearer's eyes, nose, and a substantial portion of the wearer's neck.

53. A kit for making a hardened headform, the kit comprising a resin-impregnated beanie cap and a protective barrier to shield a wearer's head from said resin, said barrier being made from latex or silicone.